

Type EZH Relief or Backpressure Regulator

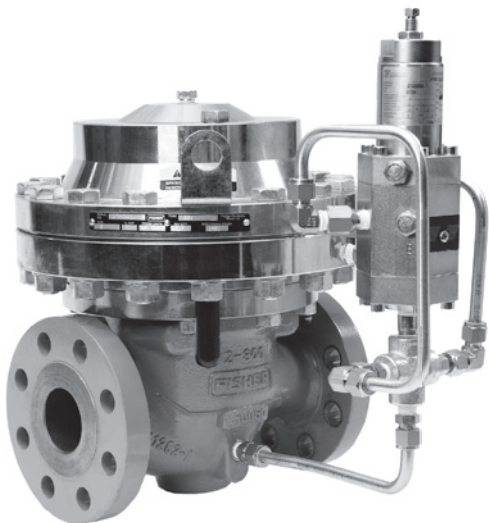


Figure 1. Type EZH Regulator



TYPE PRX/182

Figure 2. PRX Series Pilot



WARNING

Failure to follow these instructions or to properly install and maintain this equipment could result in an explosion and/or fire causing property damage and personal injury or death.

Fisher® relief valve or backpressure regulator must be installed, operated, and maintained in accordance with federal, state, and local codes, rules and regulations, and Emerson Process Management Regulator Technologies, Inc. (Regulator Technologies) instructions.

If the relief valve or backpressure regulator vents gas or a leak develops in the system, service to the unit may be required. Failure to correct trouble could result in a hazardous condition.

Call a gas service person to service the unit. Only a qualified person must install or service the relief valve or backpressure regulator.

Introduction

Scope of the Manual

This manual provides installation, startup and maintenance instructions, and parts ordering information for the Type EZH relief valve or backpressure regulator and PRX Series pilots. Information on other equipment used with this product is found in separate manuals.

Product Description

Type EZH relief valve or backpressure regulator is pilot-operated and designed for use in high pressure natural gas transmission/city gate stations, large capacity distribution systems, and power plant feeds.

Pilot Descriptions

The Type EZH relief valve or backpressure regulator include a Type PRX/182 pilot mounted on the main valve. PRX Series pressure reducing pilots have the ability to handle a wide range of setpoints from 29 to 1160 psig / 2.0 to 80.0 bar.

Type EZH Relief or Backpressure Regulator

Specifications

Ratings and specifications for the Type EZH are listed in the Specifications section below. Specifications for specific relief valve or backpressure regulator constructions are stamped on a nameplate attached to either the main actuator or the pilot spring case.

Body Sizes, End Connection Styles, and Pressure Ratings⁽¹⁾

See Table 1

Maximum Inlet and Outlet (Casing) Pressures⁽¹⁾

1500 psig / 103 bar

Maximum Emergency (Design Casing Pressure)⁽¹⁾

1500 psig / 103 bar

Maximum Operating Differential Pressure⁽¹⁾

Main Valve: 1500 psid / 103 bar d

Pilot (Between loading pressure in pilot and loading sense pressure): 1233 psid / 85.0 bar d

Outlet Pressure Ranges

See Table 2

Minimum Differential Pressures⁽¹⁾

TYPE	MAIN VALVE BODY SIZE		MINIMUM DIFFERENTIAL			
			For 90% Capacity		For 100% Capacity	
	NPS	DN	psid	bar d	psid	bar d
EZH	1	25	15.2	1.1	15.7	1.1
	2	50	12.0	0.83	13.8	0.95
	3	80	10.6	0.73	12.8	0.88
	4	100	15.8	1.1	16.4	1.1

Pressure Registration

External

Pilot Connections

1/4 NPT

Temperature Capabilities⁽¹⁾

Nitrile (NBR) Version:

-20 to 180°F / -29 to 82°C

Fluorocarbon (FKM) Version:

0 to 180°F / -18 to 82°C⁽²⁾

Options

- Pre-piped Pilot Supply
- Travel Indicator

1. The pressure/temperature limits in this Instructional Manual and any applicable standard or code limitation should not be exceeded.

2. Type PRX Fluorocarbon (FKM) elastomer is limited to 0°F / -18°C.

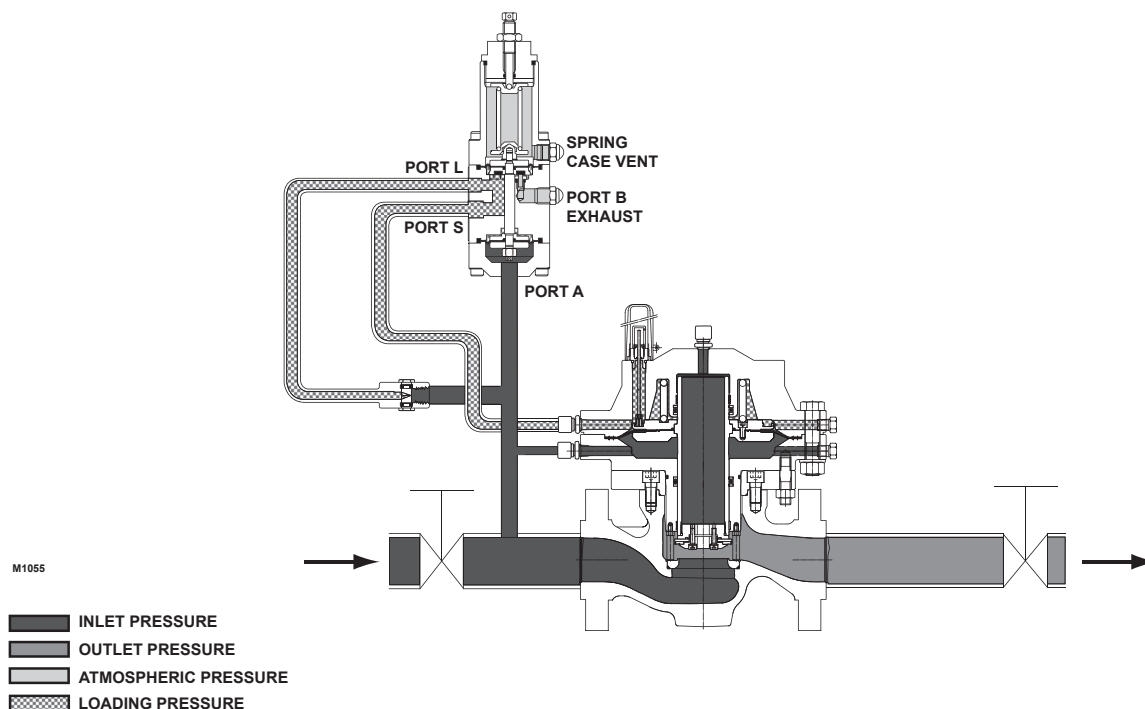


Figure 3. Type EZH with Type PRX/182 Pilot

Type EZH Relief or Backpressure Regulator

Table 1. Main Valve Body Sizes, End Connection Styles, and Body Ratings

MAIN VALVE BODY SIZE		MAIN VALVE BODY MATERIAL	END CONNECTION STYLE	STRUCTURAL DESIGN RATING	
NPS	DN			psig	bar
1	25	WCC Steel	NPT or SWE	1500	103
			CL150 RF	290	20.0
			CL300 RF	750	51.7
			CL600 RF or BWE	1500	103
2	50		NPT or SWE	1500	103
			CL150 RF	290	20.0
			CL300 RF	750	51.7
			CL600 RF or BWE	1500	103
3	80		CL150 RF	290	20.0
			CL300 RF	750	51.7
			CL600 RF or BWE	1500	103
			4	100	CL150 RF
CL300 RF	750				51.7
CL600 RF or BWE	1500				103

Table 2. Relief Set Pressure Ranges

PILOT TYPE	RELIEF SET PRESSURE RANGE		PILOT CONTROL INFORMATION									
			Part Number	Color	Wire Diameter		Free Length		Maximum Operating Pressure		Maximum Emergency Pressure	
	psig	bar			Inch	mm	Inch	mm	psig	bar	psig	bar
PRX/182	29 to 116	2.0 to 8.0	GD25522X012	Black	0.157	3.99	2.16	55	609	42.0	1480	102
	73 to 290	5.0 to 20.0	GD25520X012	Gold	0.197	5.00	2.01	51				
	217 to 609	15.0 to 42.0	GD25519X012	Red	0.236	5.99	2.01	51				
PRX-AP/182	435 to 1160	30.0 to 80.0	GD27379X012	Clear	0.335	8.51	3.94	100	1160	80.0	1480	102

Principle of Operation

A pressure relief valve is a throttling pressure control device that opens and closes to ensure the inlet pressure does not rise above a predetermined pressure. Fisher® relief valves cannot be used as ASME safety relief valves. A backpressure regulator is a device that controls and responds to changes in the upstream pressure. It functions the same as a relief valve in that it opens on increasing upstream pressure.

Relief Valve

As long as the inlet pressure is below the set pressure, the pilot control spring keeps the pilot valve plug closed. Inlet pressure passes through the restrictor and registers as loading pressure on the main valve diaphragm chamber. Force from the main spring, in addition to pilot loading pressure, provide loading pressure to keep the main valve diaphragm and plug assembly tightly shut off. When the inlet pressure rises above the set pressure, the pressure on the pilot diaphragm overcomes the pilot control spring and opens the pilot valve plug. The pilot then exhausts the loading pressure from the main valve diaphragm chamber. The pilot continuously exhausts gas when the inlet pressure is above the set pressure. The inlet pressure unbalance overcomes the main spring force and opens the diaphragm and plug assembly.

As the inlet pressure drops below the set pressure, the pilot control spring closes the pilot valve plug and the exhaust to

atmosphere stops. Force from the main spring, along with pilot loading pressure, pushes the diaphragm and plug assembly onto the knife-edged seat, producing tight shutoff.

Backpressure Regulator

As long as inlet pressure remains below setpoint, the pilot control spring keeps the pilot valve plug closed. Inlet pressure passes through the upper port around the upper portion of the valve plug and then through the hollow passage in that valve plug. Force from the main spring, in addition to pilot loading pressure, provide downward loading pressure to keep the main valve diaphragm and plug assembly tightly shut off. When inlet pressure rises above the set pressure, pressure on the pilot diaphragm overcomes the control spring to close the upper port and stroke the valve plug to open the lower port. The pilot exhausts loading pressure from the main valve diaphragm chamber. Inlet pressure unbalance overcomes the main spring force to open the diaphragm and plug assembly.

While the main valve is throttling, the upper port of the pilot stays closed. The pilot exhausts only when it repositions the main valve. As inlet pressure drops below setpoint, the pilot control spring overcomes the diaphragm force to stroke the valve plug down to close the lower port and open the upper port. Force from the main spring, along with pilot loading pressure, pushes the diaphragm and plug assembly onto the knife-edged seat, producing tight shutoff.

Type EZH Relief or Backpressure Regulator

Type EZH

Type EZH Single-Pilot Relief Valve or Backpressure Regulator

Type EZH Adjustment

The adjustment of setpoint (Figure 7), is performed by means of the pilot adjusting screw, which varies the compression of the control spring. Adjustment is performed while the relief valve or backpressure regulator is in operation with the aid of a pressure gauge to monitor upstream pressure.

Loosen the Type PRX pilot locknut and turn the adjusting screw slowly clockwise to increase set pressure and counterclockwise to decrease set pressure. Use a pressure gauge to monitor the set pressure until the desired opening pressure is reached.



CAUTION

Personal injury or equipment damage, due to bursting of pressure-containing parts may result if this relief valve or backpressure regulator is overpressured or is installed where service conditions could exceed the product and pilot pressure ratings.

Installation



WARNING

Personal injury, equipment damage, or leakage due to escaping gas or bursting of pressure-containing parts may result if the Type EZH is installed where its capabilities can be exceeded or where conditions exceed any ratings of the adjacent piping or connections. To avoid this, install a Type EZH relief valve or backpressure regulator where:

- Service conditions are within unit capabilities (including those in the Specifications section).
- Service conditions are within applicable codes, regulations, or standards.

Additionally, physical damage to the relief valve or backpressure regulator could break the pilot off the main valve, causing personal injury and property damage due to escaping gas. To avoid such injury or damage, install the unit in a safe location.

1. Only personnel qualified through training and experience should install, operate, and maintain a relief valve or backpressure regulator. Before installation, make sure that there is no damage to, or debris in the main valve body or pilot. Also, make sure that all tubing and piping are clean and unobstructed.



CAUTION

When installing Type EZH trim in an existing Fisher® E-body, damage can result if flow is not in the correct direction. Look at the body web to confirm that flow is in the correct direction—up through the center of the cage and down through the cage slots. Change the existing flow arrow if necessary.

After assembly, check for shutoff and leakage to atmosphere.

2. A Type EZH relief valve or backpressure regulator may be installed in any orientation, as long as flow through it matches the direction of the arrow on the main valve body.
3. Apply pipe compound to the external pipeline threads before installing a relief valve or backpressure regulator with threaded NPT end connections. Use gaskets between pipeline and relief valve or backpressure regulator flanges when installing a relief valve or backpressure regulator with flanged end connections. When installing butt weld end connections, remove trim before welding and make sure to use approved welding practices. Use approved piping procedures when installing the relief valve or backpressure regulator.



WARNING

When used in relief valve service, the Type EZH main valve and pilot both exhaust gas. In hazardous or flammable gas service, personal injury, death, or property damage may occur due to fire or explosion of vented gas that has accumulated. To prevent such injury or damage, provide piping or tubing to vent the gas to a safe location. The exhaust piping must be designed and installed to guard against excessive flow restriction. This piping must be protected against condensation or debris that could clog it.

For safety during shutdown, vent valves are required immediately upstream and downstream of the main valve on a backpressure or bypass installation.

4. If system operation during maintenance is required, install isolating and vent valves as needed.
5. For the Type PRX/182 pilot, if the vent assembly (key 12, Figure 7) remains in the pilot body (key 1, Figure 7), then it must be pointed down if possible or otherwise protected. If the exhaust is to be piped to the main valve exhaust or remotely vented, remove the vent assembly and install tubing or piping into the 1/4 NPT pilot exhaust connection. Protect the open end of the exhaust pipe by installing a screened vent cap.

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6. The Type PRX/182 pilot spring case vent (key 12, Figure 7) must be kept open to atmospheric pressure. Protect the vent assembly from icing, moisture, or debris that may cause blockage, as required. To change the vent orientation, twist the vent assembly in the spring case. To remotely vent the pilot spring case, remove the vent assembly and install tubing or piping into the 1/4 NPT spring case vent tapping. Protect the open end of the vent line by installing a screened vent cap.
7. The Type PRX pilot connections are 1/4 NPT. Connect the inlet control (sense) line from the "A" port, Figure 6 (key 47) on the bottom of the PRX Series pilot to a straight run of pipe 6 to 10 pipe diameters from the relief valve or backpressure regulator inlet as shown in Figure 3 using 3/8-inch / 9.5 mm or larger outside diameter tubing. If such a distance is not practical, connect the control line away from elbows, swages, nipples, or any area where abnormal flow velocities occur.

Startup and Shutdown



CAUTION

If pressure is introduced first to the main valve before the pilot, the main valve may go wide-open and subject the downstream system to full inlet pressure.

Note

The maximum inlet pressure for specific constructions are given in Table 6. Use a pressure gauge to monitor inlet pressure during startup.

Relief Installation (Figure 6)

Startup

1. Close vent valve (not shown).
2. Slowly open block valve and hand valve, if installed.
3. Adjust the pilot as needed.

Shutdown

1. Close block valve and hand valve, if installed.
2. Slowly open vent valve (not shown).

Backpressure Installation

Startup

1. Close upstream and downstream vent valves (not shown).
2. Slowly open upstream block valve first and then slowly open downstream block valve.
3. Adjust the pilot as needed. If the pilot is not piped downstream, make sure the pilot exhaust is pointed in the correct direction.

Shutdown

1. Close upstream block valve first and then close the downstream block valve.
2. Open downstream and upstream vent valves (not shown).

Type PRX/182 Pilot Adjustment

For PRX Series pilots (Figure 7), loosen locknut (key 2) and turn the adjusting screw into the spring case to increase (or out of the spring case to decrease) the downstream pressure. When the required downstream pressure is maintained for several minutes, tighten the locknut to lock the adjusting screw in position.



WARNING

Avoid personal injury or damage to property from sudden release of pressure or uncontrolled gas or other process fluid. Before starting to disassemble, carefully release all pressures according to the appropriate shutdown procedure. Use a gauge to monitor relief (inlet) pressure while releasing it.



CAUTION

Use proper lifting techniques, when lifting the upper and lower actuator casings (keys 11 and 5) off the Type EZH body (key 1). The actuator assembly weighs more than 100 pounds / 45 kg.

Customer cannot use another type of eyebolt in the regulator. Only Regulator Technologies parts can be used to repair the unit.

Eye bolts are installed to aid in the handling and installation of the Regulator Assembly only. Do not attempt to lift more weight than the regulator with these eye bolts.

Maintenance

Relief valve or backpressure regulator parts are subject to normal wear and must be inspected periodically and replaced as necessary. Due to the care Fisher® takes in meeting all manufacturing requirements (heat treating, dimensional tolerances, etc.), use only replacement parts manufactured or furnished by Fisher. Also when lubrication is required, use a good quality lubricant and sparingly coat the recommended parts.

The frequency of inspection and replacement depends upon the severity of service conditions and upon applicable codes, government regulations, and company standards.

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Table 3. Torque Specifications

PART NAME	TORQUE SPECIFICATIONS							
	Body Size							
	NPS 1 / DN 25		NPS 2 / DN 50		NPS 3 / DN 80		NPS 4 / DN 100	
	foot-pound	N•m	foot-pound	N•m	foot-pound	N•m	foot-pound	N•m
Indicator Fitting or Plug (key 141)	10 to 30	14 to 41	10 to 30	14 to 41	10 to 30	14 to 41	10 to 30	14 to 41
Stud Nuts (key 26)	45 to 50	61 to 68	45 to 50	61 to 68	80 to 95	108 to 129	----	
Socket Head Cap Screws (key 16)	50 to 70 ⁽¹⁾	5.6 to 7.9	50 to 70 ⁽¹⁾	6 to 7.9	50 to 70 ⁽¹⁾	6.2 to 7.9	100 to 115 ⁽¹⁾	11 to 13
Stud Bolts (key 24)	50 to 70	68 to 95	50 to 70	68 to 75	100 to 120	136 to 163	----	
Cap Screws (key 21)	50 to 55	68 to 75	130 to 150	176 to 203	250 to 270	339 to 366	280 to 310	380 to 420
Cap Screws (key 6)	50 to 60	68 to 81	50 to 60	68 to 81	70 to 95	95 to 129	140 to 155	190 to 210
Socket Head Cap Screws (key 33)	30 to 40 ⁽¹⁾	3.4 to 4.5	50 to 60 ⁽¹⁾	5.6 to 6.8	80 to 100 ⁽¹⁾	9 to 11	80 to 100 ⁽¹⁾	9 to 11
Smart Screws (key 68)	----		----		----		31 to 40 ⁽¹⁾	3.5 to 4.5
Socket Head Cap Screws (key 74)	----		----		----		26 to 35 ⁽¹⁾	2.9 to 4
Cap Screws (key 77)	----		----		----		90 to 110	122 to 149
Sleeve Guide (key 61)	----		----		----		130 to 140	176 to 190
Cap Screw (key 154)	16 ⁽¹⁾	1.8	50 ⁽¹⁾	5.6	10	14	2.9 to 3.5	3.9 to 4.7
Stem Nut (key 151)	32	43	32	43	45	61	45 to 50	61 to 68
Stem Nut (key 155)	30	41	----		----		----	
Hex Nut (key 152)	----		40	54	60	81	45 to 50	61 to 68

1. Torque specifications are given in inch-pounds.

Main Valve and Actuator Maintenance

NPS 1 through 3 / DN 25 through 80

Disk Maintenance (Refer to Figure 4)

For Type EZH:

1. Remove nuts (key 26).
2. Carefully lift the upper actuator casing and lower actuator casing assembly (keys 11 and 5) off the body (key 1).
3. Remove the hex socket cap screws (key 33) and lock washers (key 32). Lift off the disk holder assembly (key 30) and disk retainer (key 31).
4. Remove the O-ring (key 29). Inspect the O-ring for damage or wear, and replace if necessary. Lightly lubricate O-ring before placing in the sleeve adaptor (key 27).
5. Remove the cage (key 3), seat ring (key 2) and O-ring (key 34). Inspect the O-ring for damage or wear, and replace if necessary. Lightly lubricate O-ring before placing in the body (key 1).
6. Set the seat ring (key 2) back in the body (key 1) with the curved side down and the seat edge up. Place the cage (key 3) on top of seat ring. The cage will engage the step on the seat ring.
7. Place the disk holder assembly (key 30) and disk retainer (key 31) on the sleeve adaptor (key 27).
8. Insert the lock washers (key 32) and hex socket cap screws (key 33) and tighten. See Torque Specifications (Table 3) for proper torque values.
9. Carefully lift the upper actuator casing and lower actuator casing assembly (keys 11 and 5) and place

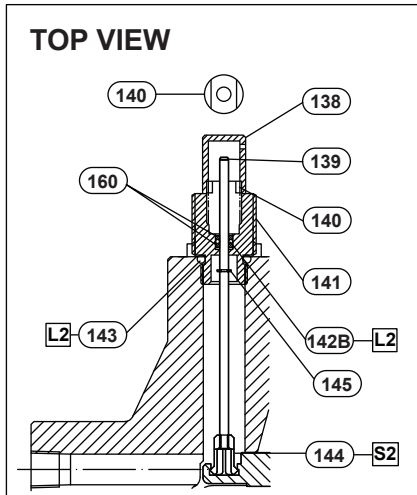
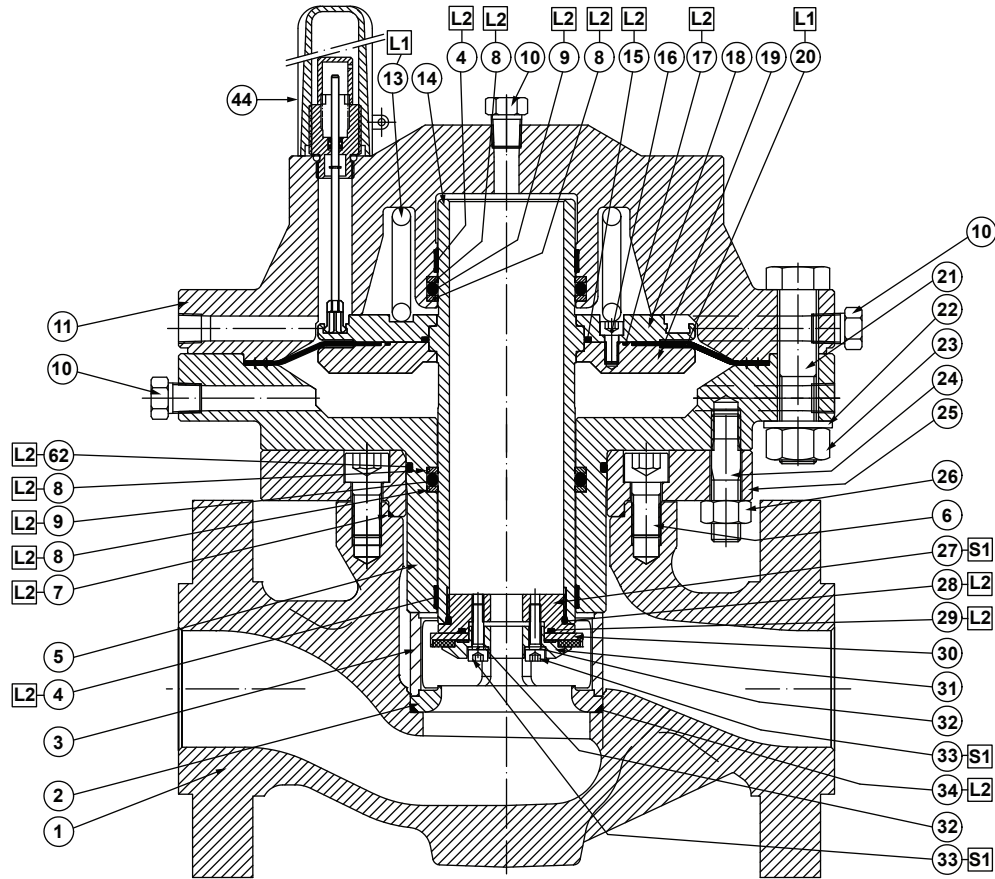
on the body (key 1). Secure with stud bolts and nuts (keys 24 and 26). See Torque Specifications (Table 3) for proper torque values.

NPS 4 / DN 100 Disk Maintenance

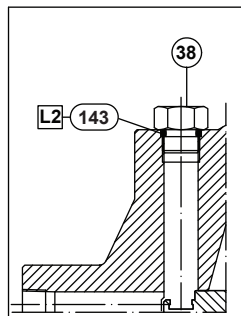
(Refer to Figure 4)

1. Remove cap screws (key 77).
2. Carefully lift the cap (key 70) off the upper actuator casing (key 11) and unscrew the eye bolts (key 35) from the cap (key 70).
3. Remove O-ring (key 75). Inspect the O-ring for damage or wear, and replace if necessary.
4. Remove the O-ring (key 69). Inspect the O-ring for damage or wear, and replace if necessary. Lubricate O-ring before placing inside the cap (key 70).
5. Remove special screws (key 68) from sleeve (key 14).
6. Fit eye bolt (key 35) into the upper spring seat (key 73) threaded hole.
7. Carefully remove the trim system from the sleeve guide (key 61) using the eye bolts (key 35).
8. Remove socket head cap screws (key 33) and lock washers (key 32).
9. Lift off the disk retainer (key 31) and disk holder assembly (key 30).
10. Remove the O-ring (key 29). Inspect the O-ring for damage or wear, replace if necessary. Lightly lubricate O-ring before placing the sleeve adaptor (key 27).
11. Place disk holder assembly (key 30) onto disk retainer (key 31).

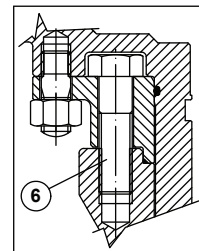
Type EZH Relief or Backpressure Regulator



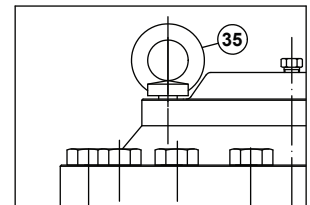
IMPROVED TRAVEL
INDICATOR DETAIL



VERSION WITHOUT
TRAVEL INDICATOR
DETAIL



FOR NPS 1 / DN 25
EZH SERIES
VERSION ONLY



FOR NPS 3 / DN 80
EZH SERIES
VERSION ONLY

NPS 1 THROUGH 3 / DN 25 THROUGH 80

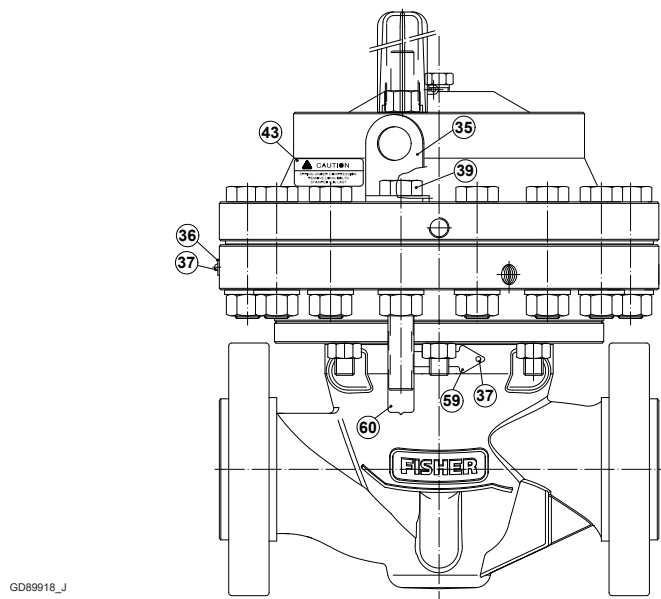
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- APPLY LUBRICANT (L) / SEALANT (S)⁽¹⁾:
- L1 = LITHIUM HYDROXYSTEGRATE NLGI 2 GRADE GREASE
 - L2 = SILICONE-BASED GREASE
 - S1 = ANAEROBIC METHACRYLATE SEALANT FOR NUTS AND BOLTS
 - S2 = ANAEROBIC METHACRYLATE SEALANT FOR THREADS

1. Lubricant and sealant must be selected such that they meet the temperature requirements.

Figure 4. Type EZH Main Valve Assembly

Type EZH Relief or Backpressure Regulator



NPS 1 THROUGH 3 / DN 25 THROUGH 80

Figure 4. Type EZH Main Valve Assembly (continued)

12. Place disk retainer (key 31) with the disk holder assembly (key 30) into sleeve adaptor (key 27) and align screw holes.
13. Place lock washer (key 32) onto the screws (key 33).
14. Screw together the disk retainer assembly into the sleeve adaptor (key 27). See Torque Specifications (Table 3) for proper torque values.
15. Lubricate the sleeve (key 14).
16. Carefully insert the trim system into the sleeve guide (key 61) utilizing eye bolt (key 35). Align sleeve utilizing the socket hex cap screw (key 74) as a guide.
17. Screw special screws (key 68) to affix the sleeve system. See Torque Specifications (Table 3) for proper torque values. Place O-ring (key 69) on cap.
18. Remove eye bolt (key 35) from upper spring seat (key 73) threaded hole.
19. Carefully place the cap on the upper actuator casing (key 11).
20. Lubricate cap screws (key 77) and attach cap (key 70) to the upper casing using cap screws (key 77). See Torque Specifications (Table 3) for proper torque values.

Note

Rotate the cap (key 70) such that the outer holes for sensing lines are in line with upper casing holes for sensing lines. To validate the alignment and before attaching cap, check that travel indicator is aligned on the cap and on the upper actuator casing.

21. Mount O-ring (key 75) on the space between the cap (key 70) and the upper actuator casing (key 11).
22. Screw the eye bolts (key 35) on the cap (key 70).

NPS 1 through 3 / DN 25 through 80 Intermediate Flange O-ring Maintenance for Type EZH

1. Remove nuts (key 26).
2. Carefully lift the upper actuator casing and lower actuator casing assemblies (keys 11 and 5) off the body (key 1).
3. Remove cap screws (key 6).
4. Lift off intermediate flange (key 25).
5. Remove O-ring (key 7). Inspect the O-ring for damage or wear, and replace if necessary. Lightly lubricate O-ring before placing in the body (key 1).
6. Place the intermediate flange (key 25) on the body, make sure to position the stud bolt (key 24) holes on the outsides of the body (key 1). Secure with cap screws (key 6). See Torque Specifications (Table 3) for proper torque values.
7. Carefully lift upper actuator casing and lower actuator casing assemblies (keys 11 and 5) and position it in the body (key 1).
8. Screw in stud bolts and nuts (keys 24 and 26). See Torque Specifications (Table 3) for proper torque values.

Type EZH Relief or Backpressure Regulator

NPS 1 through 3 / DN 25 through 80

Actuator Assembly Maintenance

(Refer to Figure 4)

1. Make a mark on the upper actuator casing (key 11), lower actuator casing (key 5), intermediate flange (key 25), and body (key 1) to indicate proper alignment when reassembling the product.
2. Remove travel indicator assembly (keys 138, 139, 140, 141, 142B, 143, 144, 145, 160, and 192), if present, by loosening the travel indicator fitting (key 141) and lifting out the travel indicator assembly.
3. Loosen out the hex nuts (key 23) and remove the washers (key 22) and the cap screws (key 21). Remove all the short bolts first, then evenly remove the two long bolts (key 39), indicated with (LB) on the head and brackets (key 35). Make sure to balance the upper actuator casing while removing the spring tension. Carefully lift the upper actuator casing (key 11) off the lower actuator casing (key 5). Remove spring (key 13).
4. Remove the socket head cap screws (key 16). Lift off the diaphragm (key 20) and the inlet plate (key 18). Remove O-rings (keys 15 and 17). Inspect the diaphragm and O-rings for damage and wear, and replace if necessary.
5. Inspect the upper actuator casing (key 11), O-ring (key 9), anti-friction split rings (key 8), and anti-friction ring (key 4) for damage or wear. If damage, remove the O-ring and split rings, and replace with new parts. Lightly lubricate the O-ring and split rings. Place the split rings in the body first, then slide the O-ring between the split rings. Lubricate and reinstall the anti-friction ring (key 4).
6. Remove hex nuts (key 26) from the stud bolts (key 24). Lift off the lower actuator casing (key 5). Remove the hex socket cap screws (key 33) and spring lock washers (key 32). Lift off the disk holder assembly (key 30) and disk retainer (key 31).
7. Slide the sleeve (key 14) out of the lower actuator casing (key 5) and slide the outlet plate (key 19) off the sleeve. Check the sleeve for scratches, burrs, or other damage, and replace if necessary.
8. Inspect the lower actuator casing (key 5), O-rings (keys 9 and 62), anti-friction split rings (key 8), and anti-friction rings (key 4) for damage or wear. If damaged, remove the O-ring and split rings, and replace with new parts. Lightly lubricate the O-ring body first, then slide the O-ring (key 9) between the split rings. Lubricate and mount O-ring (key 62) outside of the lower actuator casing (key 5).
9. Slide the outlet plate (key 19) onto the sleeve (key 14) and slide the sleeve into the lower actuator casing (key 5). Place the disk holder (key 30) and disk retainer (key 31) on the sleeve adaptor (key 27). Insert the spring lock washers (key 32) and hex socket cap screws (key 33) and tighten. See Torque Specifications (Table 3) for proper torque values.

10. Lightly lubricate the O-rings (keys 15 and 17) and the inner and outer diaphragm (key 20) edges. Place the inlet plate (key 18) and the diaphragm (key 20) on the sleeve (key 14). Make sure O-rings (keys 15 and 17) are correctly positioned. Insert and tighten the hex socket cap screws (key 16). See Torque Specifications (Table 3) for proper torque values.

Note

When tightening cap screws (key 21) arranged in a circular pattern, alternate the tightening of each fastener with the fastener directly across from it using a “star” crisscross pattern for five times, until proper specified torque is achieved. Each time around, when all screws are tightened to the required torque, the diaphragm will compress a little until the plates are in direct, metal-to-metal, contact. It will take at least five times around before this happens. Only then will the applied torque on each screw remain at the required value.

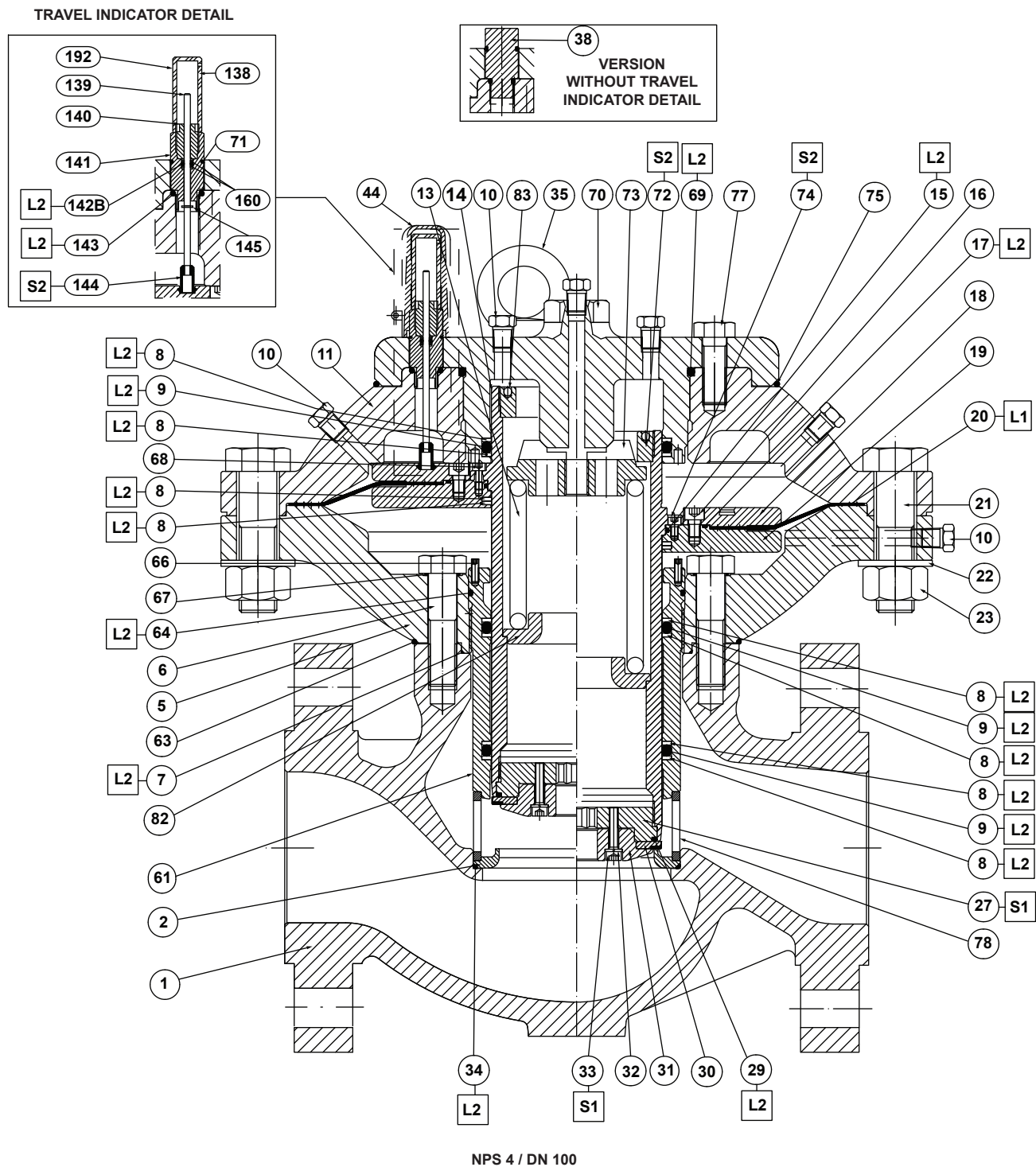
11. Carefully lift the lower actuator casing assembly (key 5) and place on the body (key 1). Make sure to match up the alignment marks. Secure with stud bolts and nuts (keys 24 and 26). See Torque Specifications (Table 3) for proper torque values.
12. Lightly lubricate the spring (key 13) and place on the inlet plate (key 18).
13. Carefully place the upper actuator casing (key 11) on the lower actuator casing (key 5). Make sure to match up the alignment marks. Insert the two long bolts (key 39) 180° apart and away from flanges. Place the washers (key 22), hex nuts (key 23), and brackets (key 35) on the long bolts and evenly tighten. Using proper bolting techniques, install remaining short bolts (key 21), washers and hex nuts. See Torque Specifications (Table 3) for proper torque values.
14. Place travel indicator assembly (keys 138, 139, 140, 141, 142B, 143, 144, 145, 160, and 192) in the upper actuator casing (key 11), if present, and tighten the travel indicator fitting (key 141).

NPS 4 / DN 100 Actuator Assembly Maintenance

(Refer to Figure 4)

1. If present, remove the travel indicator assembly by unscrewing the travel indicator fitting (key 141), then pull out the stem (key 139).
2. Remove hex head cap screws (key 21), washers (key 22), and hex nuts (key 23). Carefully lift the upper actuator casing (key 11) off the lower actuator casing (key 5). Inspect the upper actuator casing (key 11), O-rings (key 9) and anti-friction rings (key 8) for damage or wear. If damaged, remove and replace with new parts. Place the anti-friction rings in the body first, then slide the O-ring between the anti-friction rings.

Type EZH Relief or Backpressure Regulator



MLM1945_B

- APPLY LUBRICANT (L) / SEALANT (S)⁽¹⁾:
- L1 = LITHIUM HYDROXYSTEGRATE NLGI 2 GRADE GREASE
 - L2 = SILICONE-BASED GREASE
 - S1 = ANAEROBIC METHACRYLATE SEALANT FOR NUTS AND BOLTS
 - S2 = ANAEROBIC METHACRYLATE SEALANT FOR THREADS

1. Lubricant and sealant must be selected such that they meet the temperature requirements.

Figure 4. Type EZH Main Valve Assembly (continued)

Type EZH Relief or Backpressure Regulator

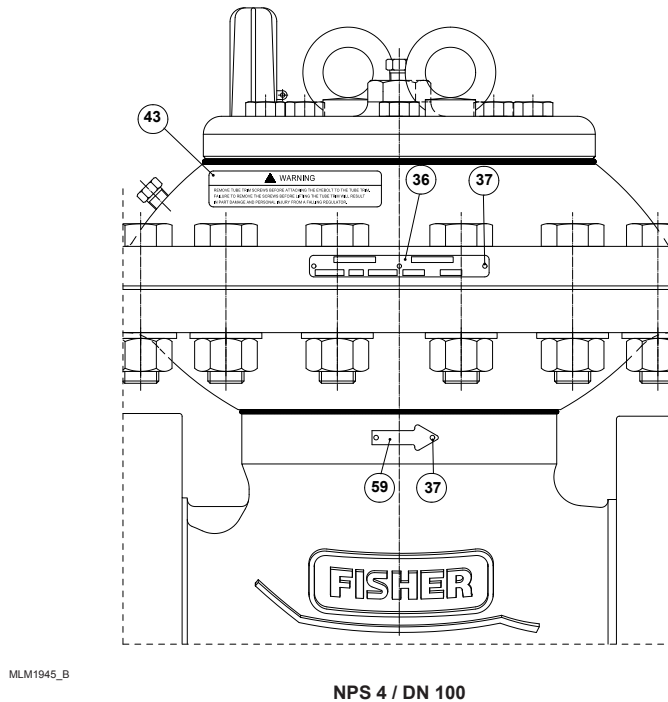
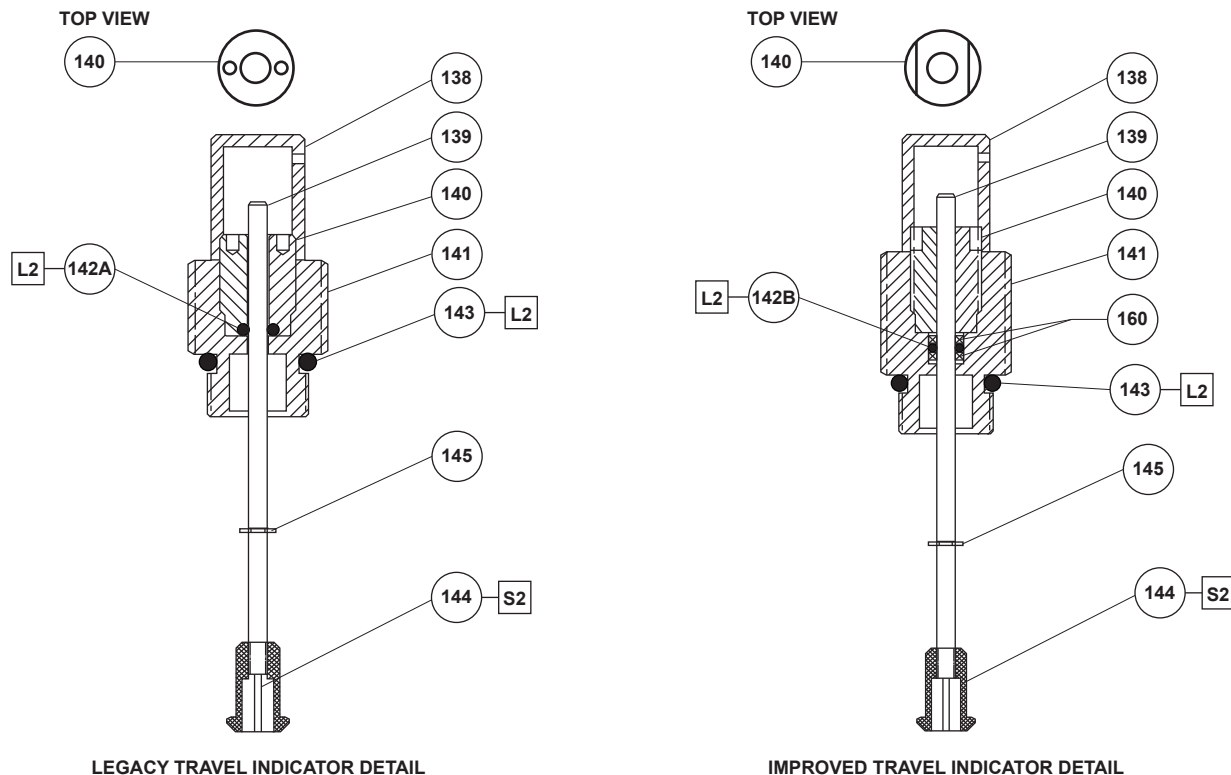


Figure 4. Type EZH Main Valve Assembly (continued)

3. Unscrew 8 special screws (key 68). Unscrew eye bolts (key 35) from the cap and unscrew 8 screws (key 77) to remove cap (key 70) from the upper actuator casing (key 5). Attach eye bolts to the upper spring seat (key 73) and lift up and remove the sleeve assembly (key 14). Lift off the diaphragm/plates system. Remove O-ring (key 15) and replace it as needed. Inspect diaphragm for damage or wear; remove screws (key 16), lift off inlet plate (key 18) to replace diaphragm (key 20) and O-ring (key 17).
4. Align screw holes on the cap (key 70) to the sleeve guide screw (key 66). Remove sleeve guide (key 61) utilizing cap (key 70) to unscrew. Inspect O-rings (keys 9 and 64) for damage or wear, replace anti-friction ring (key 8) and O-ring (key 9) if necessary. Unscrew 8 cap screws (key 6) and remove crush washers (key 67). Lift off lower casing (key 5). Inspect O-ring (keys 7 and 63) for damage or wear. Replace if necessary.
5. Remove cage (key 78).
6. Remove seat ring (key 2). Inspect seat ring for damage or wear. If damaged, replace with new parts.
7. Remove O-ring (key 34) from body. Inspect for damage or wear. If damaged, replace with new parts.
8. Lubricate O-ring (key 34) and replace into the body.
9. Place seat ring (key 2) on top of O-ring (key 34) in body with the curved side down and seat edge up.
10. Place cage (key 78) on the top of seat ring (key 2).
11. Place lower casing (key 5) on top of the body. Replace washer (key 67) and tighten cap screws (key 6). Screw sleeve guide (key 61) into lower casing (key 5) utilizing cap (key 70).
12. Lubricate the sleeve (key 14) in the upper plate contact area and assemble the diaphragm/plates system on the sleeve system. Tighten screws (key 16) using a "star" criss-cross pattern for five times until proper specified torque is achieved.
13. Screw the special screws (key 68) – already on the sleeve – to fix the diaphragm/plates system on the sleeve system. See Torque Specifications (Table 3) for proper torque values. Tighten screws (key 68) using a "star" criss-cross pattern for five times until proper specified torque is achieved.
14. Lubricate lower casing (key 5) on the diaphragm contact area.
15. Carefully insert the trim system into the sleeve guide (key 61) utilizing the eye-bolts (key 35) that fits in the upper spring seat (key 73) threaded hole.
16. Lubricate the diaphragm (key 20) on the upper casing contact area.

Type EZH Relief or Backpressure Regulator



P1766

□ APPLY LUBRICANT (L) / SEALANT (S)⁽¹⁾:

L2 = SILICONE-BASED GREASE

S2 = ANAEROBIC METHACRYLATE SEALANT FOR THREADS

1. Lubricant and sealant must be selected such that they meet the temperature requirements.

Figure 5. Type EZH Travel Indicator Assembly

17. Lubricate and mount the O-ring (key 69) on the cap (key 70). Lubricate and mount O-rings (key 9) and anti-friction rings (key 8) inside the cap. Unscrew the eye bolts (key 35) from the upper spring seat (key 73) and carefully place the cap on the upper actuator casing (key 11). Align the travel indicator hole on the cap to the upper actuator casing travel indicator hole. Lubricate cap screws (key 77) and attach cap (key 70) to the upper casing (key 5) using cap screws (key 77). Bag diaphragm flat to lower actuator casing diaphragm flange contact area. Carefully place the upper actuator casing on the top of the lower actuator casing/trim system using a stud to guide.

Note

Rotate the upper casing such that the outer holes for sensing lines are perpendicular to gas flow and outer holes of lower casing.

18. Lubricate threads on bolts (key 21).
19. Bolt together the upper and lower actuator casings (keys 11 and 5) using cap screws (key 21), washers (key 22), and hex nuts (key 23). See Torque Specifications (Table 3) for proper torque values.

Tighten cap screws using a “star” criss-cross pattern for five times until proper specified torque is achieved.

20. Mount O-ring (key 75) on the cap (key 70).
21. Screw the eye-bolts (key 35) on the cap (key 70).
22. If present, set the stem (key 139) through the casing hole and tap it into the groove in the diaphragm plate (key 18). Slide the travel indicator fitting (key 141) over the stem and tighten to the cap (key 70).

Type EZH Travel Indicator Maintenance

A new and improved travel indicator has been phased in during 2013. The new version improves the O-ring stem seal to minimize leakage and extend service life. The components of the legacy and new versions are not interchangeable. If maintenance is performed on the new travel indicator, it is recommended to replace the entire travel indicator assembly with the new version. Part numbers for the assemblies are shown in the parts list. Figure 5 shows the difference between the designs. The spare parts kits will support either design. Take care to use the correct O-ring (key 142A or 142B) when performing maintenance, see parts list for the appropriate part number.

Type EZH Relief or Backpressure Regulator

1. Remove plastic travel indicator cover (key 138).
2. Loosen travel indicator bushing (key 140) and remove it by sliding it over the travel indicator stem (key 139).
3. Remove indicator fitting (key 141) and inspect O-ring (key 143). Remove O-ring (key 142B) and back-up rings (key 160). Replace and lubricate O-ring if damaged. Pull up on the travel indicator stem (key 139) to force the spring collet (key 144) out of the diaphragm head groove. Examine these parts and the stem for wear and replace if necessary.
4. Examine the retaining ring (key 145) for wear, and replace if necessary.
5. Insert the travel indicator stem (key 139) and spring collet (key 144) back into the diaphragm head groove. Replace the indicator fitting (key 141) and O-ring (key 143), and tighten with a referenced torque of 3.7 foot-pounds / 5.0 N•m.
6. Lubricate the O-ring (key 142B) and back-up rings (key 160, 2 required). Place one back-up ring on the stem (key 139) followed by the O-ring and then the other back-up ring. Push into groove of the indicator fitting (key 141).
7. Slide the travel indicator bushing (key 140) over the travel indicator stem (key 139) and tighten firmly in place.
8. Replace the travel indicator cover (key 138) and tighten firmly in place.
6. Lightly lubricate the rims of the diaphragm (key 14) and place it on top of the lower diaphragm plate (key 15). Set the diaphragm plate (key 13) on the diaphragm (key 14).
7. Lightly lubricate the O-ring (key 18) and place it in the lower cover (key 21).
8. Place the washer (key 11) and stem nut (key 20) on the stem (key 23) and tighten. *If also performing Upper Case Maintenance, skip to step 2 of the Upper Case Maintenance section.*
9. Insert washers (key 11) and machine screws (key 10) in the lower cover (key 21) and tighten uniformly to ensure proper seal.

Upper Diaphragm Maintenance

1. Disconnect pilot and remove it from the line.
2. Loosen locknut (key 2) and back out adjusting screw (key 1) until compression is removed from the spring. Remove cap (key 3).
3. Lift the upper spring seat (key 6), spring (key 7), and O-ring (key 4) out of the spring case (key 8). Inspect O-ring and replace if necessary.
4. Remove the machine screws (key 10) and the washers (key 11), separate the spring case (key 8) from the body (key 16), and lift the lower spring seat (key 9) away from upper diaphragm nut (key 26). Use a wrench to hold stem (key 23) securely while removing the upper diaphragm nut.
5. Remove remaining loose components: washer (key 11), upper diaphragm plate (key 13), diaphragm (key 14), disk holder (key 22), and O-ring (key 18). Inspect diaphragm and O-ring for damage or wear, and replace if necessary.
6. Remove orifice (key 19) and O-ring (key 17). Inspect the parts for damage or wear, and replace if necessary. Lightly lubricate the O-ring and place in the body (key 16). Install the orifice.
7. Set the disk holder (key 22) in the body (key 16).
8. Lightly lubricate the rims of the diaphragm plate (key 14). Position the diaphragm convolution facing down, make sure that the diaphragm is not deformed and is properly installed. Take the diaphragm (key 14) and place it in the body (key 16) on top of the disk holder (key 22).
9. Set the upper diaphragm plate (key 13) on top of the diaphragm (key 14).
10. Place washer (key 11) and stem nut (key 26) on the stem (key 23) and tighten using a wrench to hold the stem.
11. Place the upper spring seat (key 9) on the upper diaphragm nut (key 26) and mount the spring case (key 8) on top of the body (key 24) and the diaphragm (key 14).

Type PRX/182 Maintenance (Figure 7)



CAUTION

Always remove spring (key 7) tension before performing maintenance on this unit. To remove spring tension, loosen locknut (key 2) and back out adjusting screw (key 1) until compression is removed from the spring.

Lower Diaphragm Maintenance

1. Disconnect pilot and remove it from the line.
2. Remove machine screws (key 10) from lower cover (key 21) and the separate lower cover from the body (key 16).
3. Use a wrench to hold the stem (key 23) and break loose the stem nut (key 20). Remove the stem nut and washer (key 11).
4. Remove the diaphragm plate (key 13), diaphragm (key 14), lower diaphragm plate (key 15), and O-ring (key 18). Inspect parts for damage or wear, replace if necessary.
5. Lightly lubricate the O-ring (key 25). Place O-ring over the stem (key 23) and press it down into the body (key 16).
6. Lightly lubricate the rims of the diaphragm (key 14) and place it on top of the lower diaphragm plate (key 15). Set the diaphragm plate (key 13) on the diaphragm (key 14).
7. Lightly lubricate the O-ring (key 18) and place it in the lower cover (key 21).
8. Place the washer (key 11) and stem nut (key 20) on the stem (key 23) and tighten. *If also performing Upper Case Maintenance, skip to step 2 of the Upper Case Maintenance section.*
9. Insert washers (key 11) and machine screws (key 10) in the lower cover (key 21) and tighten uniformly to ensure proper seal.

Type EZH Relief or Backpressure Regulator

12. Place washers (key 11) and uniformly tighten the machine screws (key 10) to hold the body (key 24) and spring case (key 8) together.
13. Install spring (key 7) and upper spring seat (key 6) on top of the lower spring seat (key 9) inside the spring case (key 8). Install Cap (key 3).
14. Screw in adjusting screw (key 1) at desired spring compression and use the lock nut (key 2) to lock the adjusting screws position.

Parts Ordering

Each Type EZH relief valve or backpressure regulator is assigned a serial number, which can be found on the nameplate. Refer to the serial number when contacting your local Sales Office for technical information or when ordering parts.

When ordering replacement parts, reference the key number of each needed part as found in the following parts list. Separate kit containing all recommended spare parts is available.

Parts Lists

Type EZH Main Valve (Figure 4)

Key	Description	Part Number
	Type EZH	
	Disk Parts Kits	
	(NPS 1, 2, and 3 / DN 25, 50, and 80 include keys 29, 30, 32, 33, 34, and 62; NPS 4 / DN 100 include keys 29, 30, 32, 33, 69, 71, and 75)	
	NPS 1 / DN 25	
	Nitrile (NBR) and Fluorocarbon (FKM)	REZH1X00N12
	Fluorocarbon (FKM)	REZH1X00F12
	NPS 2 / DN 50	
	Nitrile (NBR) and Fluorocarbon (FKM)	REZH2X00N12
	Fluorocarbon (FKM)	REZH2X00F12
	NPS 3 / DN 80	
	Nitrile (NBR) and Fluorocarbon (FKM)	REZH3X00N12
	Fluorocarbon (FKM)	REZH3X00F12
	NPS 4 / DN 100	
	Nitrile (NBR) and Fluorocarbon (FKM)	REZH4X00N12
	Fluorocarbon (FKM)	REZH4X00F12
	Type EZH	
	Full Repair Kits	
	(NPS 1, 2, and 3 / DN 25, 50, and 80 include keys 4, 7, 8, 9, 15, 17, 20, 28, 29, 30, 32, 33, 34, 62, 142B, and 143; NPS 4 / DN 100 includes keys 8, 9, 15, 17, 20, 29, 30, 32, 33, 34, 63, 64, 67, 69, 71, 75, 142B, and 143)	
1	Body	See Following Table
2	Seat Ring	
	NPS 1 / DN 25 Body	
	For 100% Capacity	GD29726X012
	For 80% Capacity	M0300940X12
	For 50% Capacity	M0300910X12
	For 30% Capacity	M0300710X12
	NPS 2 / DN 50 Body	
	For 100% Capacity	GD29581X012
	For 80% Capacity	M0300950X12
	For 50% Capacity	M0300920X12
	For 30% Capacity	M0300720X12
	NPS 3 / DN 80 Body	
	For 100% Capacity	GD29732X012
	For 80% Capacity	M0300960X12
	For 50% Capacity	M0300930X12
	For 30% Capacity	M0300730X12
	NPS 4 / DN 100 Body	
	For 100% Capacity	M0303250X12
	For 80% Capacity	M0303430X12
	For 50% Capacity	M0303420X12
	For 30% Capacity	M0303410X12
3 ⁽¹⁾	Cage	
	NPS 1 / DN 25	GE31405X012
	NPS 2 / DN 50	GE37679X012
	NPS 3 / DN 80	GE38018X012
4*	Anti-Friction Ring (2 required)	GD27409X012
	NPS 1, 2, and 3 / DN 25, 50, and 80 Only	
5	Actuator Lower Casing	
	NPS 1 / DN 25 Body	GD29697X012
	NPS 2 / DN 50 Body	GD29583X012
	NPS 3 / DN 80 Body	GE44397X012
	NPS 4 / DN 100 Body	M0300770X12
6	Cap Screws	
	NPS 1 / DN 25 Body (4 required)	GD89878X012
	NPS 2 / DN 50 Body (8 required)	GE11386X012
	NPS 3 / DN 80 Body (8 required)	GE11387X012
	NPS 4 / DN 100 Body (8 required)	M4691020X12

*Recommended Spare Part

1. When retrofitting a Type EZH with pins with the new cage, it's also necessary to order the Seat Ring.

Type EZH Relief or Backpressure Regulator

Key 1, Type EZH Main Valve Body Part Numbers

BODY SIZE		BODY MATERIAL	END CONNECTION STYLE	BODY STYLE		
NPS	DN			Standard or Tapped Inlet (Pilot Supply)	Tapped Inlet and Tapped Outlet	
1	25	Cast iron	NPT	GE11518X012	-----	
			CL125 FF	GE11528X012	14B5623X012	
			CL250 RF	GE11580X012	14B5623X022	
		WCC Steel	NPT	GE11581X012	-----	
			SWE	GE11440X012		
			CL150 RF	GE11583X012	14B5623X032	
			CL300 RF	GE11607X012	14B5623X042	
			CL600 RF	GE11608X012	14B5623X052	
			SCH 40 BWE	GE11610X012		
			SCH 80 BWE	GE11611X012		
			PN 16-40 RF	GE13625X012		
			2	50		Cast iron
CL125 FF	GE10585X012					
CL250 RF	GE10587X012					
WCC Steel	NPT	GE10588X012				
	SWE	GE10682X012				
	CL150 RF	GE10676X012				14B5834X032
	CL300 RF	GE10678X012	14B5834X042			
	CL600 RF	GE10679X012	14B5834X052			
	SCH 40 BWE	GE10680X012				
SCH 80 BWE	GE10681X012					
PN 16-40	GE12898X012 ⁽¹⁾	-----				
3	80	Cast iron	CL125 FF	GE10689X012		
			CL250 RF	GE10698X012		
		WCC Steel	CL150 RF	GE10699X012	14B5835X032	
			CL300 RF	GE10700X012	14B5835X042	
			CL600 RF	GE10701X012	14B5835X052	
			SCH 40 BWE	GE10702X012		
			SCH 80 BWE	GE10703X012		
			PN 25-40	GE13594X012 ⁽¹⁾		-----
4 ⁽²⁾	100	Cast iron	CL125 FF	GE10707X012		
			CL250 RF	GE10822X012		
		WCC Steel	CL150 RF	GE10835X012	14B5836X032	
			CL300 RF	GE10839X012	14B5836X042	
			CL600 RF	GE10842X012	14B5836X052	
			SCH 40 BWE	GE10843X012		
SCH 80 BWE	GE10844X012					

1. Not available for Standard body.

2. Not available for Tapped Inlet (Pilot Supply) body.

Table 4. Type EZH Travel Indicator Assemblies Part Numbers⁽¹⁾

DESCRIPTION	MATERIAL	NPS 1 / DN 25	NPS 2 / DN 50	NPS 3 / DN 80	NPS 4 / DN 100
Types EZH and EZHSO	Nitrile (NBR)	ERSA01539A0	ERSA01546A0	ERSA01547A0	ERSA01549A0

1. The assemblies include keys 138, 139, 140, 141, 142B, 143, 144, 145, 160, and 192.

Type EZH Relief or Backpressure Regulator

Type EZH Main Valve (continued)

Key	Description	Part Number	Key	Description	Part Number
7*	O-ring NPS 1, 2, and 3 / DN 25, 50, and 80 NPS 4 / DN 100	19B2838X012 M6020169X12	22	Plain Washer NPS 1 / DN 25 Body (16 required) NPS 2 / DN 50 Body (16 required) NPS 3 / DN 80 Body (16 required) NPS 4 / DN 100 Body (16 required)	1A518925072 1A3517K0012 1A519828992 M5001015X12
8*	Anti-Friction Rings (4 required)	M0194530X12	23	Hex Nut NPS 1 / DN 25 Body (16 required) NPS 2 / DN 50 Body (16 required) NPS 3 / DN 80 Body (16 required) NPS 4 / DN 100 Body (16 required)	1A341224122 1A343324122 ERCA01576A0 M4692005X12
9*	O-ring (2 required)	GD89895X012	24	Continuous Thread Stud Bolt NPS 1, 2, and 3 / DN 25, 50, and 80 Only NPS 1 / DN 25 Body (4 required) NPS 2 / DN 50 Body (6 required) NPS 3 / DN 80 Body (4 required)	GD89876X012 GE00808X012 GD89871X012
10	Pipe Plug	1A767524662	25	Intermediate Flange NPS 1, 2, and 3 / DN 25, 50, and 80 Only NPS 1 / DN 25 Body NPS 2 / DN 50 Body NPS 3 / DN 80 Body	GD29724X012 GD29580X012 GE44403X012
11	Actuator Upper Casing NPS 1 / DN 25 Body NPS 2 / DN 50 Body NPS 3 / DN 80 Body NPS 4 / DN 100 Body	GD29722X012 GD29695X012 GE44420X012 M0300760X12	26	Hex Nut NPS 1, 2, and 3 / DN 25, 50, and 80 Only NPS 1 / DN 25 Body (4 required) NPS 2 / DN 50 Body (6 required) NPS 3 / DN 80 Body (4 required)	1A341224122 1A341224122 GD89867X012
13	Spring NPS 1 / DN 25 Body NPS 2 / DN 50 Body NPS 3 / DN 80 Body NPS 4 / DN 100 Body ⁽²⁾	M0194590X12 M0191440X12 M0192240X12 M0300740X12	27	Sleeve Adaptor NPS 1 / DN 25 Body NPS 2 / DN 50 Body NPS 3 / DN 80 Body NPS 4 / DN 100 Body ⁽²⁾	GD27425X012 GD27257X012 GD27634X012 M0300090X12
14	Sleeve NPS 1 / DN 25 Body NPS 2 / DN 50 Body NPS 3 / DN 80 Body NPS 4 / DN 100 Body ⁽²⁾	GD27423X012 GD27260X012 GD27631X012 M0300050X12	28*	O-ring NPS 1, 2, and 3 / DN 25, 50, and 80 Only	GD89892X012
15*	O-ring	GD89893X012	29*	O-ring	GD89891X012
16	Socket Head Cap Screw NPS 1 / DN 25 Body (6 required) NPS 2 / DN 50 Body (6 required) NPS 3 / DN 80 Body (12 required) NPS 4 / DN 100 Body (8 required)	GD89877X012 19B0829X012 GD89872X012 M5011157X12	30*	Disk Holder Assembly NPS 1 / DN 25 Body Nitrile (NBR) Fluorocarbon (FKM) NPS 2 / DN 50 Body Nitrile (NBR) Fluorocarbon (FKM) NPS 3 / DN 80 Body Nitrile (NBR) Fluorocarbon (FKM) NPS 4 / DN 100 Body Nitrile (NBR) Fluorocarbon (FKM)	GD28090X012 GD28213X012 GD28091X012 GD28214X012 GD28092X012 GD28215X012 M0299090X12 M0300120X12
17*	O-ring	GD89894X012	31	Disk Retainer NPS 1 / DN 25 Body NPS 2 / DN 50 Body NPS 3 / DN 80 Body NPS 4 / DN 100 Body	GD27416X012 GD27275X012 GD27625X012 M0300100X12
18	Inlet Plate NPS 1 / DN 25 Body NPS 2 / DN 50 Body NPS 3 / DN 80 Body NPS 4 / DN 100 Body	M0194440X12 M0194620X12 M0192080X12 M0300020X12	32	Lock Washer NPS 1 / DN 25 Body (1 required) NPS 2 / DN 50 Body (2 required) NPS 3 / DN 80 Body (3 required) NPS 4 / DN 100 Body (4 required)	GD89875X012 19B0819X012 GD89870X012 M5001004X12
19	Outlet Plate NPS 1 / DN 25 Body NPS 2 / DN 50 Body NPS 3 / DN 80 Body NPS 4 / DN 100 Body	M0194480X12 M0194660X12 M0192120X12 M0300030X12			
20*	Diaphragm NPS 1 / DN 25 Body NPS 2 / DN 50 Body NPS 3 / DN 80 Body NPS 4 / DN 100 Body	GD19445X012 GD19463X012 GD19209X012 M0194750X12			
21	Cap Screw NPS 1 / DN 25 Body (14 required for Type EZH) NPS 2 / DN 50 Body (14 required for Type EZH) NPS 3 / DN 80 Body (14 required for Type EZH) NPS 4 / DN 100 Body (16 required)	1A361524052 1A936224052 GF05679X012 M4691022X12			

*Recommended Spare Part

2. Parts are not orderable. See sleeve subassembly table if it needs to be replaced.

Type EZH Relief or Backpressure Regulator

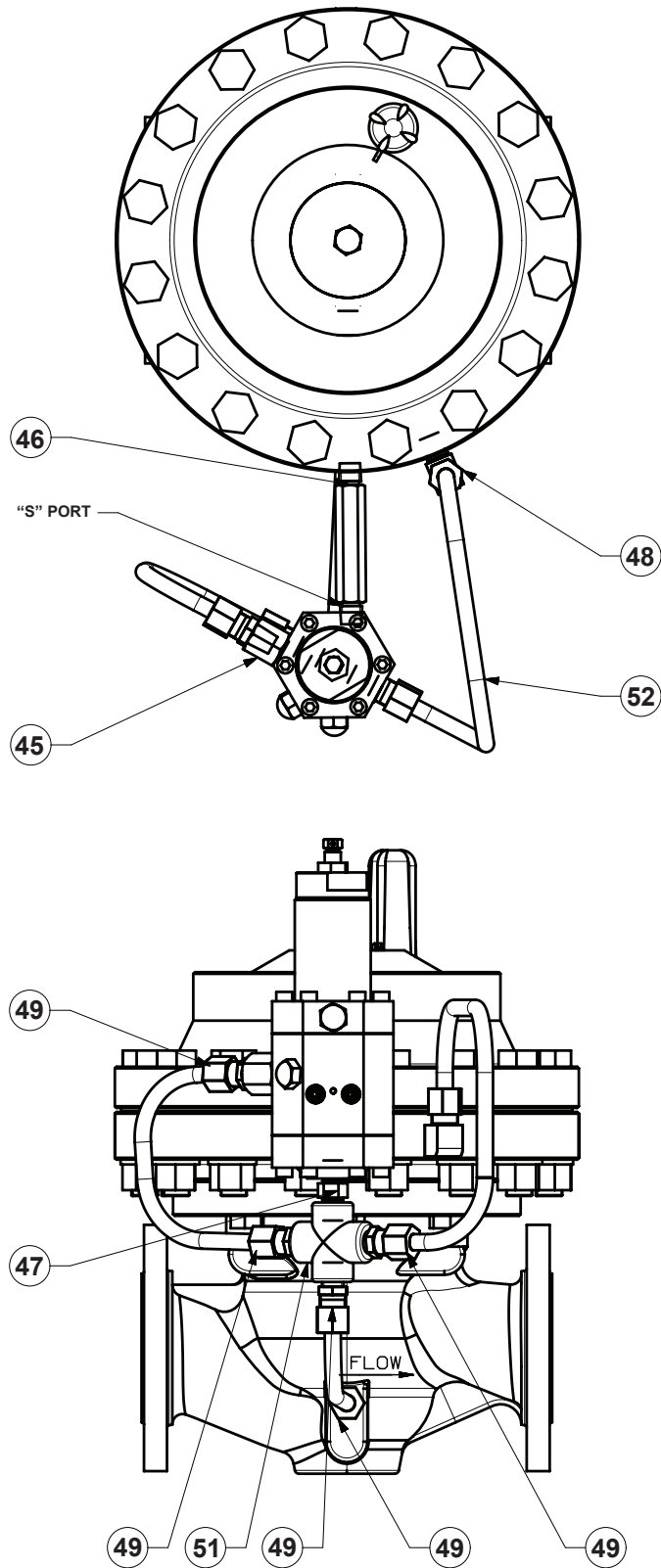


Figure 6. Type EZH Mounting Assembly

Type EZH Relief or Backpressure Regulator

Type EZH Main Valve (continued)

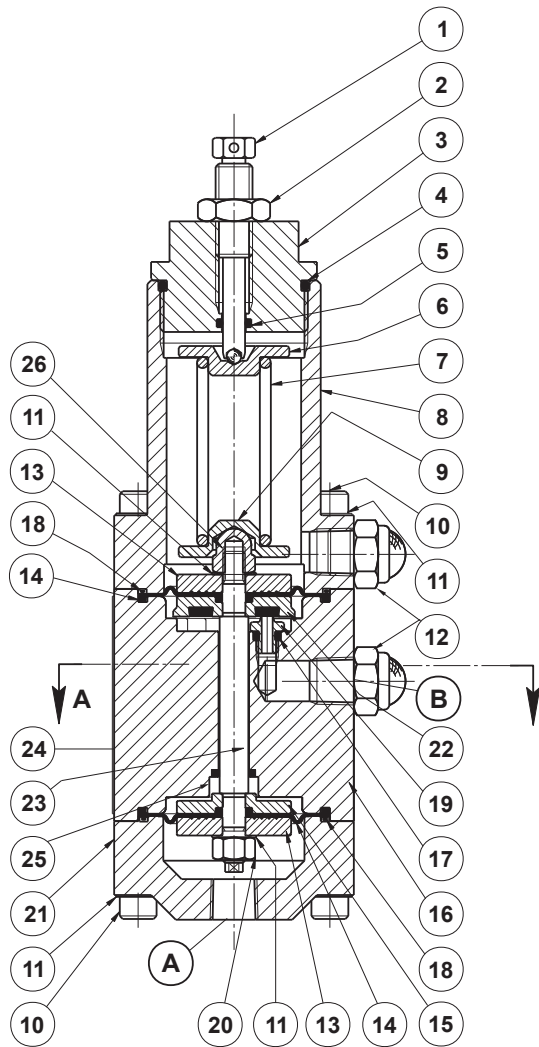
Key	Description	Part Number	Key	Description	Part Number
33	Socket Head Cap Screw NPS 1 / DN 25 Body (1 required) NPS 2 / DN 50 Body (2 required) NPS 3 / DN 80 Body (3 required) NPS 4 / DN 100 Body (4 required)	GD89874X012 18B5515X012 GD89869X012 M5011018X12	66	Socket Head Set Screw NPS 4 / DN 100 Body Only (8 required)	M5021047X12
34*	O-ring	GD89880X012	67	Crush Washer NPS 4 / DN 100 Body Only (8 required)	M4501738X12
35	Bracket or Eyebolt (2 required) NPS 1 / DN 25 Body - Bracket NPS 2 / DN 50 Body - Bracket NPS 3 / DN 80 Body - Eyebolt NPS 4 / DN 100 Body - Eyebolt	GD22096X012 GD27857X012 GD89866X012 M5095001X12	68	Special Screw NPS 4 / DN 100 Body Only (8 required)	M0300040X12
36	Nameplate	-----	69*	O-ring	M6020149X12
37	Drive Screw (2 required)	-----	70	Cap NPS 4 / DN 100	M0299980X12
38	Travel Indicator Plug NPS 1, 2, and 3 / DN 25, 50, and 80 Bodies NPS 4 / DN 100 Body	GD29768X012 M0303680X12	71*	O-ring	M6020175X12
39	Long Bolt (2 required) NPS 1 / DN 25 Body NPS 2 / DN 50 Body NPS 3 / DN 80 Body	GE07221X012 GE00606X012 ERCA01574A0	72	Locking Nut NPS 4 / DN 100 Body Only ⁽³⁾	M0300060X12
43	Caution/Warning Label NPS 1, 2, and 3 / DN 25, 50, and 80 Bodies (2 required) NPS 4 / DN 100 (1 required)	----- -----	73	Upper Spring Seat NPS 4 / DN 100 Body Only ⁽³⁾	M0300070X12
44	Adjusting Screw Cap NPS 1 / DN 25 NPS 2 / DN 50 NPS 3 and 4 / DN 80 and 100 Bodies	24B1301X012 24B1301X012 24B1301X012	74	Hex Socket Cap Screw NPS 4 / DN 100 Body Only	M5011135X12
59	Flow Arrow NPS 1 / DN 25 Body NPS 2 / DN 50 Body NPS 3 / DN 80 Body NPS 4 / DN 100 Body	1V105938982 1V106038982 1V106038982 1V106038982	75*	O-ring	M6020117X12
60	Protective Cap (2 required) NPS 1, 2, and 3 / DN 25, 50, and 80 Bodies Only NPS 1 / DN 25 Body NPS 2 / DN 50 Body NPS 3 / DN 80 Body	T13659T0102 T13659T0072 T13659T0102	77	Screw NPS 4 / DN 100 Body Only (8 required)	M5009048X12
61	Sleeve Guide NPS 4 / DN 100 Body Only	M0300360X12	78	Cage ⁽¹⁾ NPS 4 / DN 100 Body Only Standard	M0303260X12
62*	O-ring NPS 1, 2, and 3 / DN 25, 50, and 80 Bodies Only	M6020082X12	82	Lower Spring Seat NPS 4 / DN 100 Body Only ⁽³⁾	M0300080X12
63*	O-ring	M6020172X12	83	Ball Bearing (2 required) NPS 4 / DN 100 Body Only ⁽³⁾	M4500574X12
64*	O-ring	M6020139X12	138	Indicator Cover	M0194580X12
			139	Travel Indicator Stem	ERSA01803A0
			140	Indicator Bushing	ERSA02798A0
			141	Travel Indicator Fitting	ERSA02569A0
			142A*	O-ring Nitrile (NBR) Fluorocarbon (FKM)	M6010001X12 M6020066X12
			142B*	O-ring Nitrile (NBR) Fluorocarbon (FKM)	1H2926X0032 1H2926X0022
			143*	O-ring	M6020005X12
			144	Spring Collet	M019218X012
			145	Retaining Ring	M4500325X12
			159	Check Valve	15A6011E182
			192	Travel Indicator Scale	M0201990X12

*Recommended Spare Part

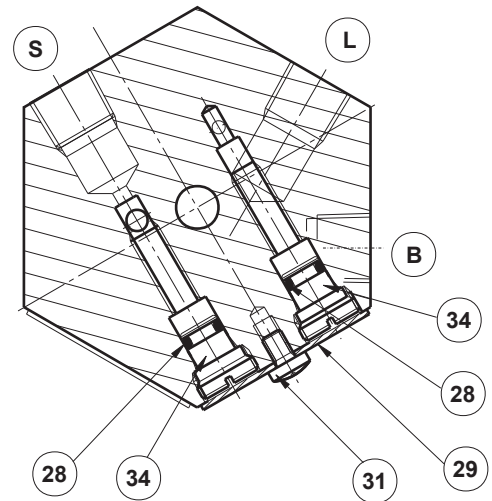
1. When retrofitting a Type EZH with pins with the new cage, it's also necessary to order the Seat Ring.

3. Included also in sleeve subassembly.

Type EZH Relief or Backpressure Regulator



TYPE PRX/182 PILOT ASSEMBLY



SECTION A - A

Figure 7. Type PRX/182 Pilot Assemblies

PRX Series Mounting Parts

Key	Description	Part Number
45	Bleed Orifice	GE01698X012
46	Pipe Nipple	GE13860X012
47	Pipe Nipple	1C488226232
48	Tube Elbow	
	Steel Fitting	15A6002XW32
	Stainless steel Fitting	15A6002X612
49	Male Tube Connector	
	Steel Fitting	15A6002XW22
	Stainless steel Fitting	15A6002X602
51	Pipe Cross	1L3719X0012
52	Tubing	0500213809W

*Recommended Spare Part

PRX Series Pilot Parts List

Key	Description	Part Number
	Parts Kits	
	(includes keys 4, 5, 14, 17, 18, 25, and 28)	
	Type PRX/182	
	Nitrile (NBR)	RPRX00X0N12
	Fluorocarbon (FKM)	RPRX00X0F12
1	Adjusting Screw	GD25334X012
2	Locknut	GD03600X012
3	Cap	GD25335X012
4*	Spring Case O-ring	
	Nitrile (NBR)	GD01017X012
	Fluorocarbon (FKM)	GD01017X022
5*	O-ring	
	Nitrile (NBR)	GD01000X012
	Fluorocarbon (FKM)	GD01000X022

Type EZH Relief or Backpressure Regulator

PRX Series Pilot Parts List (continued)

Key	Description	Part Number	Key	Description	Part Number
6	Upper Spring Seat	GD25336X012	20	Nut	GD00200X012
7	Spring	See Table 2	21	Lower Cover	GD29860X012
8	Spring Case	GD29854X012	22*	Disk Holder	
9	Spring Carrier Plate	GD25338X012		Nitrile (NBR)	GD25340X012
10	Machine Screw	M5011018X12		Fluorocarbon (FKM)	M0279950X12
11	Washer	GD05500X012	23	Stem	GD25343X012
12	Filter	GD50036X012	24	Nameplate	GD26808X012
13	Diaphragm Plate	GD25339X012	25*	Stem O-ring	
14*	Diaphragm			Nitrile (NBR)	GD01022X012
	Nitrile (NBR)	GG05785X012		Fluorocarbon (FKM)	GD01022X022
	Fluorocarbon (FKM)	GG05785X022	26	Upper Diaphragm Nut	GD02800X012
15	Diaphragm Plate	GD25341X012	27	Damper Adjusting Screw with Hole	GD25348X012
16	Body	GD25331X012	28*	Restrictor/Damper O-ring	GD02005X022
17*	Orifice O-ring		29	Damper/Restrictor Plate	
	Nitrile (NBR)	GD02012X012		Types PRX/182 and PRX-AP/182	GD25440X012
	Fluorocarbon (FKM)	GD02012X022		Types PRX/182 and PRX-AP/182	GD25793X012
18*	Lower Cover O-ring		31	Nameplate Screw	GD06100X012
	Nitrile (NBR)	GD01009X012	33	Plug (Type PRX/182)	GD50032X012
	Fluorocarbon (FKM)	GD01009X022	34	Plug (Type PRX/182)	GD25792X012
19	Orifice	GD25344X012	35	Spring Barrel Extension for AP	GD27410X012

*Recommended Spare Part

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